

Claims

- [c1] A core for a multi-phase transformer, said core including a body made of two or more rings having a common central axis, each ring consisting of a strip of magnetic permeable material wound about said central axis, said body provided with a plurality of windows passing radially through said body, each window bound by opposed axially extending legs and opposed circumferentially extending branches, wherein said branches of each window are provided in respective axially adjacent rings, said branches and legs of each window defining a closed magnetic circuit of substantially uniform magnetic permeability through which magnetic flux can circulate about said windows.
- [c2] The core according to claim 1 including a plurality of primary windings, one primary winding provided for each electrical phase, each primary winding having at least one turn wound directly about a branch or a leg of a corresponding window.
- [c3] The core according to claim 2 wherein at least one of said primary windings is wholly wound about one or both branches of said corresponding window.
- [c4] The core according to claim 2 wherein at least one of said primary windings is wholly wound about one or both legs of said corresponding window.
- [c5] The core according to claim 2 wherein at least one of said primary windings has a plurality of turns wherein at least one of said turns is wound about one branch of said corresponding window and at least one turn is wound about one leg of said corresponding window.
- [c6] A multi-phase transformer including at least:
a core according to claim 1;
a plurality of primary windings, one primary winding being provided for each electrical phase of said transformer; and,
a plurality of secondary windings;
each primary winding having at least one turn wound directly about a branch or a leg of a corresponding window to produce lines of magnetic flux which circulate about said corresponding window; and,

at least one of said secondary windings having at least one turn wound directly about a branch or a leg of a window about which said lines of magnetic flux circulate to induce the current in said at least one secondary winding.

- [c7] The transformer according to claim 6 wherein at least one primary winding is wound directly about at one or both branches of one window, and at least one secondary winding is wound directly about one or both branches of said one window.
- [c8] The transformer according to claim 6 wherein at least one primary winding is wound directly about one or both branches of one window, and at least one secondary winding is wound directly about one or both legs of said one window.
- [c9] The transformer according to claim 6 wherein at least one primary winding is wound directly about one or both branches of one window, and at least one secondary winding is wound directly about at least one branch and at least one leg of said one window.
- [c10] The transformer according to claim 6 where in at least one primary winding is wound directly about one or both branches of one window, and at least one secondary winding is wound directly about a branch or a leg of said one window, and directly about a branch or a leg of another window.
- [c11] The transformer according to claim 6 wherein at least one primary winding is wound directly about one or both legs of one window, and at least one secondary winding is wound directly about one or both branches of said one window.
- [c12] The transformer according to claim 6 wherein at least one primary winding is wound directly about one or both legs of one window, and at least one secondary winding is wound directly about one or both legs of said one window.
- [c13] The transformer according to claim 6 wherein at least one primary winding is wound directly about one or both legs of one window, and at least one secondary winding is wound directly about at least one branch and at least one leg of said one window.

[c14] The transformer according to claim 6 wherein at least one primary winding is wound directly about one or both legs of a window, and at least one secondary winding is wound directly about at least one branch or one leg of said one window, and about at least one branch or one leg of another window.

[c15] The transformer according to claim 6 wherein at least one primary winding is wound directly about at least one branch and at least one leg of one window, and at least one secondary winding is wound directly about a branch or a leg of said one window.

[c16] The transformer according to claim 6 wherein at least one primary winding is wound directly about at least one branch and at least one leg of one window, and at least one secondary winding is wound directly about at least one branch and at least one leg of said one window.

[c17] A core for a multi-phase transformer, said core including a body made of magnetically permeable material in the shape and configuration of a loop about a central axis, said body provided with a plurality of windows passing axially through said body, each window defined by radially opposite branches and circumferentially opposite legs, where each leg is common to two circumferentially adjacent windows.

[c18] A core for a multi-phase transformer according to claim 17, including a plurality of primary windings, one primary winding provided for each electrical phase, each primary winding having at least one turn wound directly about a branch or a leg of a corresponding window.

[c19] A core for a multi-phase transformer according to claim 18 wherein the radially opposite branches of each window are configured to have the same volume of magnetically permeable material.

[c20] A method of constructing a core according to claim 1, said method including the steps of stamping and winding about said central axis a strip of magnetically permeable material to form said body, said stamping arranged to produce said plurality of windows passing radially through said body.

- [c21] The method according to claim 20 including the step of splitting said core through a plane passing through said windows.
- [c22] A method of constructing a core according to claim 1, said method including the steps of stamping strips of magnetically permeable material to form respective rings, aligning said rings along said common central axis, said stamping and aligning arranged to produce said plurality of windows.
- [c23] A method of constructing a core according to claim 1, said method including the steps of continuous winding about said central axis a strip of magnetically permeable material to form said body; and machining, cutting or otherwise forming said plurality of windows radially through said body.
- [c24] The method according to claim 23 including the step of splitting said core through a plane passing through said windows.
- [c25] The method according to claim 21 including the step of loading a prewound bobbin on one or more legs of said core.
- [c26] The method according to claim 22 including the step of loading a prewound bobbin on one or more legs of said core.
- [c27] The method according to claim 24 including the step of loading a prewound bobbin on one or more legs of said core.
- [c28] A method of constructing a core according to claim 1, said method including the steps of continuous winding strips of magnetically permeable material to form respective rings, and machining or forming said plurality of windows radially through respective rings of said body, aligning said rings along said common central axis to form said body, said machining and aligning arranged to produce said plurality of windows.
- [c29] A method of constructing a core according to claim 1, said method including the steps of continuous winding strips of magnetically permeable material to form respective rings, aligning said rings along said common central axis to form said body, said rings being spaced apart by an array of legs to form a plurality of windows passing radially through said body, wherein said branches

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